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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/560,838	04/28/2000	Daniel J. Shoff	MS1-430-US	5056

22801 7590 09/29/2003

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EXAMINER

BATAILLE, PIERRE MICHE

ART UNIT	PAPER NUMBER
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2186

DATE MAILED: 09/29/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/560,838	SHOFF ET AL.
	Examiner	Art Unit
	Pierre-Michel Bataille	2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 28 April 2000.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3,7-19,23-35 and 39-46 is/are rejected.
- 7) Claim(s) 4-6,20-22 and 36-38 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.	6) <input type="checkbox"/> Other: _____.

DETAILED ACTION

1. This Office Action is taken in examination of application filed April 28, 2000, in which claims 1-46 are pending. The Office acknowledges receipt of Correction of File Receipt received July 16, 202.

Specification

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

3. The disclosure is objected to because of the following informalities: the specification should be updated to update the status of all noted co-pending applications, if any.

The numbering of claim 47 is improper. On page 26, claim 47 has been renumbered 46 according to 37CFR 1.126. As such, the dependency of the claim has been changed to 45.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,078,541 (Kitagawa et al.).

With respect to claims 1, 17, and 33, Kitagawa teaches a device controller for controlling the operation of a non-volatile memory and providing application accessing the non-volatile memory [Fig. 1-2; Col. 2, Lines 2-6]: comprising an operating system (device operating program) and device driver (device controller being for any peripheral device), wherein the operating system is configured to exchange input/output (I/O) requests with the applications and exchange corresponding file system requests with the device driver [Col. 2, Lines 57-67], and wherein the device driver is configured to store the file system data (digital information) received from the operating system in a plurality of reserved sectors within the non-volatile memory (non-volatile memory 201), compress the file system data stored within the plurality of reserved sectors to create a compressed data block and stored the compressed data block in at least one physical subsectors within the non-volatile memory [abstract; Col. 2, Lines 3-18].

With respect to claims 10, 26, and 42, Kitagawa teaches storing the compressed data block in at least one physical sub-sector and maintaining input/output operation status information within the non-volatile memory device during on-going I/O operations [Col. 2, Lines 65-67].

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-3, 7-16, 18-19, 23-32, 34-35, and 39-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,078,541 (Kitagawa et al) in view of US 6,401,181 (Franašek et al).

With respect to claims 2, 18, and 34, Kitagawa teaches the invention as claimed and noted above in claims 1, 17, and 33, but fails to teach presenting to the operating system with a plurality of operatively accessible virtual sectors resulting in memory capacity that exceeds the actual physical capacity of the non-volatile memory. However, Franašek teaches dynamic allocation of physical memory space that present to an operating system with a plurality of operatively accessible virtual sectors resulting in memory capacity that exceeds the actual physical capacity of the non-volatile memory [Col. 2, Lines 42-48]. Therefore, it would have been obvious to one having ordinary skill in the art and having the teachings of Kitagawa and Franašek before him/her at the time of the invention to introduce the virtual memory sectors teaching on Franašek into the application processing features of Kitagawa and present to an operating system with a plurality of operatively accessible virtual sectors resulting in memory capacity that exceeds the actual physical capacity of the non-volatile memory, as taught by Franašek because the result would have provided dynamic memory allocation mechanism in the main memory addressing path that exploits the spatial efficiencies of computer main memory indexing schemes, as taught by Franašek [Col. 2, Lines 42-45].

With respect to claim 3, 19, and 35, Franaszek teaches mapping virtual sectors to at least one physical sector through a virtual sector table stored in RAM (non-volatile memory) and presenting the operating system with the virtual table sector [Fig. 1 and 3; Col. 2, Lines 45-66; Col. 3, Line 60 to Col. 4, Line 3].

With respect to claims 7, 9-16, 23, 25-32, and 39-46, Kitagawa teaches the invention as claimed and noted above in claims 1, 17, and 33, but fails to specify associating a physical subsector with at least one virtual sector identifier or mapping a physical subsector to a group identifier. However, Franaszek teaches dynamic allocation of physical memory space a low level main memory design for storing compressed data that includes a directory portion and a collection of fixed size blocks which are used to store lines in compressed format, wherein: highly compressible lines may be stored entirely within a directory entry; the directory entry points to one or more of the fixed size blocks which are used to store the line in compressed format; page tables which translate virtual addresses to real addresses which correspond to the location in the directory of the directory entry for the line and which includes information pertaining to blocks holding a compressed line; the information in a directory entry includes flags, fragment combining information, and, assuming fixed size entry structure pointers to one or more fixed size blocks; on a cache miss, the memory controller and decompression hardware finds the blocks allocated to store the compressed line and dynamically decompresses the line to handle the miss [Col. 3, Lines 60 to Col. 4, Line 3; Col. 5, lines 20-65; Col. 6, Lines 24-47]. Therefore, it would have been obvious to one

having ordinary skill in the art and having the teachings of Kitagawa and Franaszek before him/her at the time of the invention to introduce the virtual memory sectors teaching of Franaszek into the application processing features of Kitagawa and associate a physical subsector with at least one virtual sector identifier or mapping a physical subsector to a group identifier, as taught by Franaszek because the result would have provided schemes for reducing operating system process interruptions where processor memory read and write operations are expedited without external system interruption. Franaszek further teaches real memory pages may be grouped into classes and the physical memory usage of each of these classes monitored and managed by the dynamic memory system to facilitate the management of these memory pools, and modern operating systems to control pools of memory so that various processes and users share the system resources fairly [Col. 4, Lines 29-37].

With respect to claims 8, 24, and 40, Franaszek teaches storing compresses data in at least one physical subsector within non-volatile memory including writing each physical subsector associated with the compressed data block to the non-volatile memory in a sequential order, but not necessary in contiguous order [Col. 2, Line 66 to Col. 3, Line 4].

Allowable Subject Matter

8. Claims 4-6, 20-22, and 36-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,864,859 (Franaszek et al) teaching system and method of compression and decompression using store addressing.

US 5,699,539 (Garber et al) teaching virtual memory management system and method using data compression.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Michel Bataille whose telephone number is (703) 305-0134. The examiner can normally be reached on Tue-Fri (7:30A to 6:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew M. Kim can be reached on (703) 305-3821. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Pierre-Michel Bataille
Examiner
Art Unit 2186

September 21, 2003